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Silicon-Based Ring Systems: Structural Motifs, Stereochemical
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Silicon-Based Ring Systems: Structural Motifs, Stereochemical Aspects, and Use as Synthetic Intermediates

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Small inorganic ring systems have always been highly attractive targets for exploring new bonding concepts and they impressively demonstrate the diversity of the structural chemistry of main-group element compounds. The development of new types of silicon-based cycles that carry functional or chiral information can give important impetus for the design of novel reactivity patterns. For example, we enabled synthetic access to stereochemically pure four-membered heterocyclic cations with phosphine chalcogenide-stabilized silicon centers and studied their stereochemical behavior in ring-opening and ring-closing reactions. The development of robust siloxane-based cationic rings led to the discovery of an interesting ion pair reactivity. Recently, we reported a route to diaminocyclosilanes that proved to be versatile reactive intermediates for siloxane scaffold design. The presentation gives an overview of our recent work on synthesis, stereochemistry, and application of new silicon-based ring systems.